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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,515	09/17/2001	Hyung-Chul Choi	M0023/7000D	9063

22832 7590 10/19/2006

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EXAMINER	
HON, SOW FUN	
ART UNIT	**PAPER NUMBER**
1772	

DATE MAILED: 10/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/954,515	CHOI ET AL.	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *18-24 and 26-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *18-24, 26-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/01/06 has been entered.

Response to Amendment

Withdrawn Rejections

2. The 35 U.S.C. 112, 1st paragraph, and 103(a) rejections of claims 18-24, 26-32 are withdrawn due to Applicant's amendment dated 08/01/06.

New Rejections

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action

3. Claim 31 recites the limitation "the hard coating" in claim 29. There is insufficient antecedent basis for this limitation in the claim.

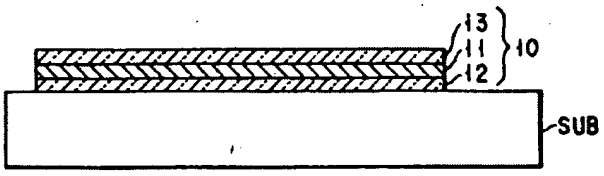
4. Claims 35, 39 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification describes the electrode assembly of Applicant's invention as having a transparency at 550 nm of greater than 80% (page 10, lines 1-5).

Claim Rejections - 35 USC § 103

5. Claims 18-24, 26-27, 32, 35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi (US 5,667,853) in view of CERAC (CERAC Technical Publications) and Austin (US 5,508,091).

Regarding claims 18, 32, Fukuyoshi teaches a substantially transparent electrode assembly (column 8, lines 62-67), in Fig. 1, shown below, comprising a substrate (SUB); a first transparent oxide layer 12 formed on the substrate; a silver-based metallic layer 11 formed on transparent oxide layer 12; and a second transparent layer 13 formed on the conductive layer 11 (column 4, lines 18-30, Fig. 1). The silver layer 11 is conductive (column 5, lines 55-60). Layers 12 and 13 are high refractive index layers (column 12, lines 1-10). Hence the conductive layer 11 is formed on and disposed adjacent to the high index layer 12 in the embodiment of Fukuyoshi shown below (Fig. 1).



Fukuyoshi teaches that the resist film of the predetermined electrode pattern is formed on the transparent oxide layer 13, and that the electrode pattern is etched with the three thin layers aligned with each other, forming transparent multilayered conductive films of electrodes (column 13, lines 45-55). Hence at least the top transparent oxide layer 13 and the conductive layer 11 are patterned so as to divide the conductive layer into a plurality of discrete electrodes.

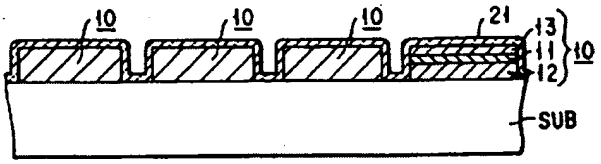
Fukuyoshi teaches that the top transparent oxide layer 13 has a thickness of 30 to 100 nm (column 5, lines 25-30), which overlaps the claimed range of about 20 nm to about 100 nm. Fukuyoshi teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines 60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30), but fails to disclose that the conductivity is adjusted to a value ranging from about 100 ohms/square to about 400 ohms/square.

However, CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90% (Film Properties section), applied to its use is in electrodes (Introduction section).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made, to have adjusted the conductivity of the high index top transparent oxide layer of Fukuyoshi, to provide a value ranging from about 100 ohms/square to about 400 ohms/square, in order to obtain a substantially transparent

conductive electrode assembly with high transmission in the visible light region, as taught by CERAC.

In addition, Fukuyoshi teaches a coating layer 21 of silica (silicon oxide, column 8, lines 40-41), which is hard, and is disposed on at least one surface of the substrate SUB in Fig. 2 below.



F I G. 2

Fukuyoshi in view of CERAC, fails to teach that the layer of silica disposed on the substrate is in substantially continuous contact with the substrate, or disclose the claimed thickness of the continuous silica layer.

However, Austin teaches a layer of silica in continuous contact with the substrate (barrier layer 54 of silicon dioxide, deposited on substrate 22, column 11, lines 20-27), with a thickness of about 25 nm (layer 109 is a layer of silicon dioxide, column 16, lines 17-19), which is within the claimed range of from about 10 to about 30 nm, for the purpose of preventing material from substrate 22 from diffusing into other layers of the coating (column 12, lines 16-23) for a transparent electrode assembly (column 1, lines 14-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a barrier layer of silica with a thickness within the range of from about 10 to 30 nm, disposed in continuous contact with the substrate, in the transparent electrode assembly of Fukuyoshi in view of CERAC, in

order to prevent material from the substrate from diffusing into the other layers, as taught by Austin.

Regarding claim 19, Fukuyoshi in view of CERAC and Austin, fails to teach that the electrode assembly has a plurality of conductors connected to portions of the top layer overlying the discrete electrodes.

However, Fukuyoshi teaches a chip for driving the device formed overlying (on) a portion of the electrode (column 10, lines 25-35). Contacts, which are conductors, are needed for the purpose of connecting the electrodes to the chip.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a plurality of conductors connected to portions of the top layer overlying the discrete electrodes in the electrode assembly of Fukuyoshi in view of CERAC and Austin, in order to provide electrical contacts connecting the electrodes to the chip, as taught by Fukuyoshi.

Regarding claim 20, Fukuyoshi in view of CERAC and Austin, fails to teach that the high index layer adjacent the substrate is an electrically insulating layer.

However, Fukuyoshi teaches a set of electrodes 34 that is adjacent to the screen (user)-side substrate 31 in Fig. 3 (column 9, lines 14-24). The layer that is adjacent to the substrate with the potential of contacting the observer would need to be electrically insulating for the purpose of preventing any electrical shock to the user.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the high index layer, which is adjacent to

the screen-side substrate, of Fukuyoshi in view of CERAC and Austin, an electrically insulating one, in order to protect the user from electrical shock.

Regarding claim 21, Fukuyoshi teaches that the substrate is a synthetic resin material (plastic, column 9, lines 40-50).

Regarding claims 22, 24, Fukuyoshi teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines 60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30).

Regarding claim 23, Fukuyoshi teaches that the conductive layer 11 comprises silver and gold (column 5, lines 45-55) which form an alloy.

Claim 24 has been discussed above.

Regarding claim 26, Fukuyoshi teaches a liquid crystal display assembly comprising a liquid crystal material LC sandwiched (column 9, lines 49-50) between two electrode assemblies 42 and 34 in Fig. 3 (column 9, lines 35-40).

Regarding claim 27, Fukuyoshi in view of CERAC and Austin, fails to teach that the liquid crystal display screen (column 21, lines 20-25) is a touch screen-type.

However, touch screen displays were notoriously well known to one of ordinary skill in the art at the time the invention was made, for the purpose of providing touch-screen capability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have made the liquid crystal display screen of

Fukuyoshi into a touch-screen-type, in order to provide the desired touch-screen capability.

Regarding claim 35, Fukuyoshi teaches that the electrode assembly has 2.7 ohms per square sheet resistance (column 13, lines 57-60), which is within the claimed range of less than 10 ohms per square sheet resistance. Fukuyoshi fails to teach that the electrode assembly has 80 % transparency at 550 nm.

However, Fukuyoshi teaches embodiments wherein the electrode assembly has 95 % transparency at 550 nm (visible light transmittance, column 14, lines 40-50). The modification of the electrode assembly of Fukuyoshi with other layers, for the purpose of adding other functionalities, can reduce the transparency of the overall electrode assembly.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have modified the electrode assembly of Fukuyoshi with other functional layers, in order to add other functionalities, resulting in the reduction of the transparency of the overall electrode assembly.

Regarding claim 36, Fukuyoshi fails to teach that the top layer is formed at a temperature not greater than 170°C. However, even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See MPEP 2113.

6. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi in view of CERAC and Austin, as applied to claims 18-24, 26-27, 32, 35-36 above, and further in view of Yatabe (US 4,234,654).

Fukuyoshi in view of CERAC and Austin, teaches a substantially transparent electrode assembly comprising: a substrate; a high index layer formed on the substrate; a conductive layer formed on and disposed adjacent to the high index layer; a high index top layer having a conductivity within the range of from about 100 ohms/square to about 400 ohms/square and a thickness within the range of from about 20 nm to about 100 nm formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes; and a layer of silica disposed on the substrate, wherein the layer of silica is substantially continuous contact with the substrate, as discussed above. In addition, Fukuyoshi teaches that the substrate is a synthetic resin (plastic) material (column 9, lines 40-50. Fukuyoshi in view of CERAC and Austin, fails to teach that the synthetic resin material is a polycarbonate or a polyacrylate.

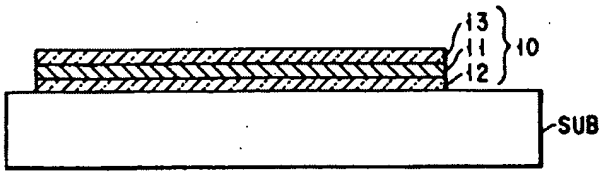
However, Yatabe teaches a conductive laminate used as a transparent electrode structure for a liquid crystal display (column 9, lines 20-30), wherein the substrate material is a polycarbonate, or polyacrylate (acrylic resin, column 7, lines 55-65), for the purpose of taking advantage of the physical properties of the specific resin material.

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used polycarbonate or polyacrylate as materials for the synthetic resin substrate in the electrode assembly of Fukuyoshi in view of

CERAC and Austin, in order to take advantage of the physical properties of the specific resin materials, as taught by Yatabe.

7. Claims 29-30, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi (US 5,667,853) in view of CERAC (CERAC Technical Publications).

Fukuyoshi teaches a substantially transparent electrode assembly (column 8, lines 62-67), in Fig. 1, shown below, comprising a substrate (SUB); a first transparent oxide layer 12 formed on the substrate; a silver-based metallic layer 11 formed on transparent oxide layer 12; and a second transparent layer 13 formed on the conductive layer 11 (column 4, lines 20-30). The silver layer 11 is conductive (column 5, lines 55-60). Layers 12 and 13 are high refractive index layers (column 12, lines 1-10). Thus the silver conductive layer 11 is formed on a disposed adjacent to the high index layer 12, as shown below in Fig. 1 of Fukuyoshi.



Fukuyoshi teaches that the resist film of the predetermined electrode pattern is formed on the high index layer 13, and that the electrode pattern is etched with the three thin layers aligned with each other, forming transparent multilayered conductive films of electrodes (transparent oxide layer 13, column 13, lines 45-55). Hence at least the high index top layer 13 and the conductive layer 11 are patterned so as to divide the conductive layer into a plurality of discrete electrodes. Fukuyoshi teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines

60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30), but fails to disclose that the conductivity is adjusted to a value ranging from about 100 ohms/square to about 400 ohms/square.

However, CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90% (Film Properties section), wherein one use is in electrodes (Introduction section).

Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made, to have adjusted the conductivity of the high index top transparent oxide layer of Fukuyoshi, to provide a value ranging from about 100 ohms/square to about 400 ohms/square, in order to obtain a substantially transparent conductive electrode assembly with high transmission in the visible light region, as taught by CERAC.

Regarding claim 30, Fukuyoshi teaches the electrode assembly further comprises a coating layer 21 of silica (silicon oxide, column 8, lines 40-41, Fig. 2) shown below, which is a hard coating.

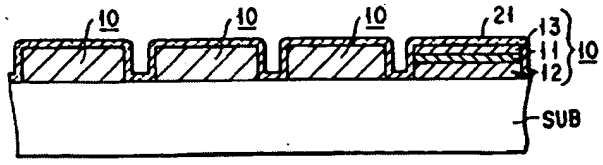


FIG. 2

Regarding claim 39, Fukuyoshi teaches that the electrode assembly has 2.7 ohms per square sheet resistance (column 13, lines 57-60), which is within the claimed range of less than 10 ohms per square sheet resistance. Fukuyoshi fails to teach that the electrode assembly has 80 % transparency at 550 nm.

However, Fukuyoshi teaches embodiments wherein the electrode assembly has 95 % transparency at 550 nm (visible light transmittance, column 14, lines 40-50). The modification of the electrode assembly of Fukuyoshi with other layers, for the purpose of adding other functionalities, can reduce the transparency of the overall electrode assembly.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have modified the electrode assembly of Fukuyoshi with other functional layers, in order to add other functionalities, resulting in the reduction of the transparency of the overall electrode assembly.

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi in view of CERAC, as applied to claims 29-30, 39 above, and further in view of Tanitsu (US 5,520,952).

Fukuyoshi in view of CERAC, teaches a substantially transparent electrode assembly comprising: a substrate; a high index layer formed on the substrate; a conductive layer formed on and disposed adjacent to the high index layer; a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square, formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete

electrodes, wherein the electrode assembly further comprises a hard coating, as discussed above. Fukuyoshi in view of CERAC, fails to teach that the hard coating has a thickness of from about 1 micron to about 15 microns.

However, Tanitsu teaches that that the surface of electronic parts is required to be protected against mechanical damage by forming a hard coating thereon (protective coating film having high hardness, column 1, lines 14-18). Tanitsu teaches that the coating amount and hence thickness is dependent on the particular types of the substrate material, but that the thickness of the coating is usually in the range of from 0.01 to 5 microns (column 6, lines 20-25), which overlaps the claimed range of from about 1 micron to about 15 microns.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided the hard coating of Fukuyoshi in view of CERAC, with a thickness in the range of about 1 micron to about 15 microns, in order to provide the selected substrate with the desired protection from mechanical damage, as taught by Tanitsu.

9. Claims 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi in view of CERAC and Austin, as applied to claims 18-24, 26-27, 32, 35-36 above, and further in view of Takase (US 5,750,267).

Fukuyoshi in view of CERAC and Austin, teaches a substantially transparent electrode assembly comprising: a substrate; a high index layer formed on the substrate; a conductive layer formed on and disposed adjacent to the high index layer; a high index top layer having a conductivity within the range of from about 100 ohms/square to

about 400 ohms/square and a thickness within the range of from about 20 nm to about 100 nm formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes; and a layer of silica disposed on the substrate, wherein the layer of silica is substantially continuous contact with the substrate, as discussed above. In addition, Fukuyoshi teaches that the conductive layer comprises a layer of silver (11, column 4, lines 18-30, Fig. 1). Fukuyoshi in view of CERAC and Austin, fails to teach that the conductive layer comprises a layer of gold disposed on a layer of silver, let alone a layer of silver sandwiched between two layers of gold.

However, Takase teaches a transparent electrode assembly (conductive laminate, title) comprising a laminate of at least one metal selected from silver and gold (column 7, lines 13-23), wherein a thin film of metal such as gold may be disposed on the silver layer (gold, thin film of metal other than silver may be laminated on the silver thin layer, column 4, lines 46-52), for the purpose of preventing deterioration of the transparent electrode assembly due to electrification, so long as conductivity and transparency are not impaired (column 4, lines 45-51). Takahase fails to teach that the layer of silver is sandwiched between two layers of gold.

However, Takahase teaches that the metallic layers can be alternated (column 4, lines 50-52). Thus it would have been obvious to one of ordinary skill in the art to have optimized the process of making the transparent conductive laminate, to obtain one wherein the layer of silver is sandwiched between two layers of gold, for the purpose of preventing the transparent electrode assembly from deterioration due to electrification.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have optimized the process of making the transparent electrode assembly of Fukuyoshi in view of CERAC and Austin, to obtain one wherein wherein a layer of gold is disposed on the layer of silver, or wherein the layer of silver is sandwiched between two layers of gold, in order to prevent the desired transparent electrode assembly from deterioration due to electrification, as taught by Takase.

10. Claims 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi in view of CERAC, as applied to claims 29-30, 39 above, and further in view Takase (US 5,750,267).

Fukuyoshi in view of CERAC, teaches a substantially transparent electrode assembly comprising: a substrate; a high index layer formed on the substrate; a conductive layer formed on and disposed adjacent to the high index layer; a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square, formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes, wherein the electrode assembly further comprises a layer of silica disposed on the substrate, as discussed above. In addition, Fukuyoshi teaches that the conductive layer comprises a layer of silver (11, column 4, lines 18-30, Fig. 1). Fukuyoshi in view of CERAC, fails to teach that the conductive layer comprises a layer of silver disposed on a layer of gold, let alone a layer of silver sandwiched between two layers of gold.

However, Takase teaches a transparent electrode assembly (conductive laminate, title) comprising a laminate of at least one metal selected from silver and gold (column 7, lines 13-23), wherein the layer of silver is disposed on a layer of gold (gold, thin film of metal other than silver may be laminated on the silver thin layer, column 4, lines 46-52), for the purpose of preventing deterioration of the transparent electrode assembly due to electrification, so long as conductivity and transparency are not impaired (column 4, lines 45-51). Takahase fails to teach that the layer of silver is sandwiched between two layers of gold.

However, Takahase teaches that the metallic layers can be alternated (column 4, lines 50-52). Thus it would have been obvious to one of ordinary skill in the art to have optimized the process of making the transparent conductive laminate, to obtain one wherein the layer of silver is sandwiched between two layers of gold, for the purpose of preventing the transparent electrode assembly from deterioration due to electrification.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have optimized the process of making the transparent electrode assembly of Fukuyoshi in view of CERAC, to obtain one wherein the layer of silver is disposed on a layer of gold, or wherein the layer of silver is sandwiched between two layers of gold, in order to prevent the desired transparent electrode assembly from deterioration due to electrification, as taught by Takase.

11. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuyoshi in view of CERAC, as applied to claims 29-30, 39 above, and further in view of Tanitsu (US 5,520,952).

Fukuyoshi in view of CERAC, teaches a substantially transparent electrode assembly comprising: a substrate; a high index layer formed on the substrate; a conductive layer formed on and disposed adjacent to the high index layer; a high index top layer having a conductivity ranging from about 100 ohms/square to about 400 ohms/square, formed on the conductive layer, at least the top layer and the conductive layer being patterned so as to divide the conductive layer into a plurality of discrete electrodes, wherein the electrode assembly further comprises a layer of silica disposed on the substrate, as discussed above. Fukuyoshi in view of CERAC, fails to teach that the layer of silica is in substantially continuous contact with the substrate.

However, Austin teaches a layer of silica in continuous contact with the substrate (barrier layer 54 of silicon dioxide, deposited on substrate 22, column 11, lines 20-27), with a thickness of about 25 nm (layer 109 is a layer of silicon dioxide, column 16, lines 17-19), which is within the claimed range of from about 10 to about 30 nm, for the purpose of preventing material from substrate 22 from diffusing into other layers of the coating (column 12, lines 16-23) for a transparent electrode assembly (column 1, lines 14-19).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a barrier layer of silica with a thickness within the range of from about 10 to 30 nm, disposed in continuous contact with the

substrate, in the transparent electrode assembly of Fukuyoshi in view of CERAC, in order to prevent material from the substrate from diffusing into the other layers, as taught by Austin.

Response to Arguments

12. Applicant's arguments with respect to claims 18-24, 29-32, have been considered but are moot in view of the new ground(s) of rejection. However, Applicant's arguments against the valid use of Fukuyoshi, Austin, CERAC, are addressed below in order to advance prosecution.

13. Applicant argues in the rejections wherein Fukuyoshi is the primary reference, that the present specification states that the preferred materials and processes for forming the top layer are the same as those for forming the insulating layer, except that the condition used to deposit the top layer should be varied so as to give the top layer substantial conductivity, while neither Fukuyoshi nor CERAC teaches that the condition used to deposit the high index top layer and the high index layer [on the substrate] is varied to give the top layer substantial conductivity.

Applicant is respectfully apprised that Applicant has not further recited the high index layer adjacent the substrate as being an insulating layer wherein the insulating layer is defined by conductivity values that are much lower than the top high index layer

in the present claims. The primary reference, Fukuyoshi, teaches that the high index top transparent oxide layer 13 comprises primarily indium oxide (column 6, lines 60-65) and a small amount of tin oxide (forming indium tin oxide), titanium (di)oxide or gallium oxide to adjust the conductivity (column 7, lines 20-30), while the secondary reference, CERAC teaches that high conductivity is balanced against high transmission in the visible light region, and that indium tin oxide must have a conductivity (in Applicant's terminology) or sheet resistance of greater than 100 ohms/square in order to obtain visible region transmission near 90 % (Film Properties section), used in electrodes (Introduction section). Therefore both Fukuyoshi and CERAC teach the variation of the conductivity of the indium tin oxide to balance the conductivity with the light transmission.

As Applicant pointed out in the arguments, CERAC teaches that the optical and electronic properties of ITO films are highly dependent on the deposition parameters. While CERAC does not disclose the exact conditions, Applicant is respectfully reminded that the present claims are product claims, wherein determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See MPEP 2113.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

10/16/05